

# Growing WILD

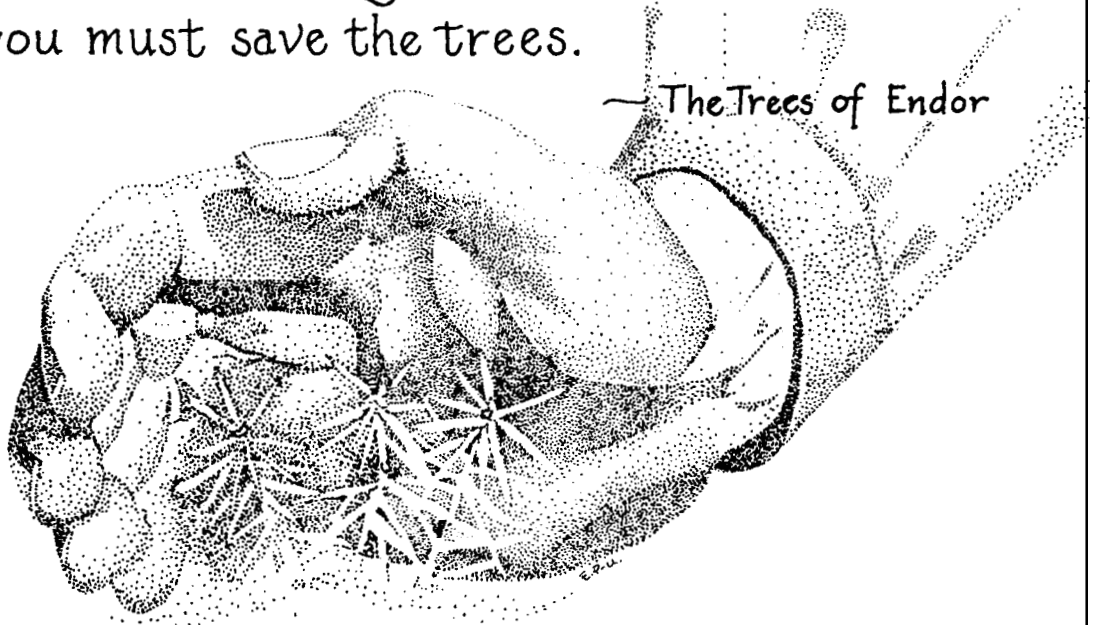
Utah's Project WILD Newsletter

Spring '90



Trees purify the air, they also purify the mind...  
if you want to save your world,  
you must save the trees.

— The Trees of Endor



These year-old seedlings will be five feet high in five years, if conditions are good.

## "Replanting the Forest"

(Excerpts from Peter Steinhart's article, *Audubon*, March 1990)

This may be the decade of planting trees.

Tree planters often say they are trying to put back what was once there. Forest once covered 12 to 16 billion acres worldwide, but perhaps half the forest that existed before agriculture has vanished. The world continues to lose 27 million acres of tropical forest -- an area the size of Tennessee -- each year. More than one-third of the land area of the United States was once forested, but nearly half of that forest has vanished.

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With increasing evidence that deforestation and the burning of fossil fuels are changing the world's climate, tree planting has a new sense of immediacy. By the most commonly accepted estimates, we are putting 5.8 billion tons of carbon into the atmosphere each year by burning fossil fuels. We are adding another billion tons by cutting down the world's forests. The oceans can absorb about two billion tons of that carbon, but the rest accumulates in the atmosphere, trapping solar heat and raising global temperatures. Atmospheric carbon levels have risen 25 percent since the Industrial Revolution. Reforestation has been suggested as a solution.

There is no question that we are powerless to stop global warming. Right now we're on a course where we could see a twenty percent increase of carbon emissions by the year 2000. And even if we could stop our profligate use of fossil fuels, the CO<sub>2</sub> already in the atmosphere is going to go on warming the globe for the next fifty years.

No one believes we can plant enough forest to offset all the carbon we put into the skies by burning fossil fuels. We don't pretend to believe the trees will solve the greenhouse effect. But physicist Arthur Rosenfeld of the Lawrence Berkeley Laboratory and others believe planting trees can forestall even more serious climate changes -- changes that could bring new rainfall patterns, altering food production and causing rising sea levels that endanger coastal residents.

Many dismiss tree planting as a sleight of hand that takes our minds off the real issue of energy use. But trees may be more of a solution than we know. Planting them may do much more for us than just sequester carbon. Planting trees seems to elicit a real sense of stewardship.

**Planting a tree allows us to think about what we borrow from the future and owe to the past. To sit in the shade of a tree one's ancestors planted is to have inherited space and time and the freedom to walk with them. If you can give such things to grandchildren, you must be accounted rich and wise. Trees are powerful symbols of human aspiration.**

Planting...gives seed to questions. Who will care for these trees? That question is not just about who will water them, but who will change their lives so that there is space and air, wind and water, respect for the past and future? Who will demand more efficient autos? Who will go out tomorrow to purchase a more efficient refrigerator? Who will drive less or insulate the walls or demand that legislators and business managers think beyond their own careers?

What seeds are we planting here? Planter Dave Schrom isn't out just to plant a carbon bank. And Andy Lipkis of TreePeople organizes planters to "make the important life-style changes necessary to clean up the environment." In the end, he says, "people need this as much as the environment needs the trees."

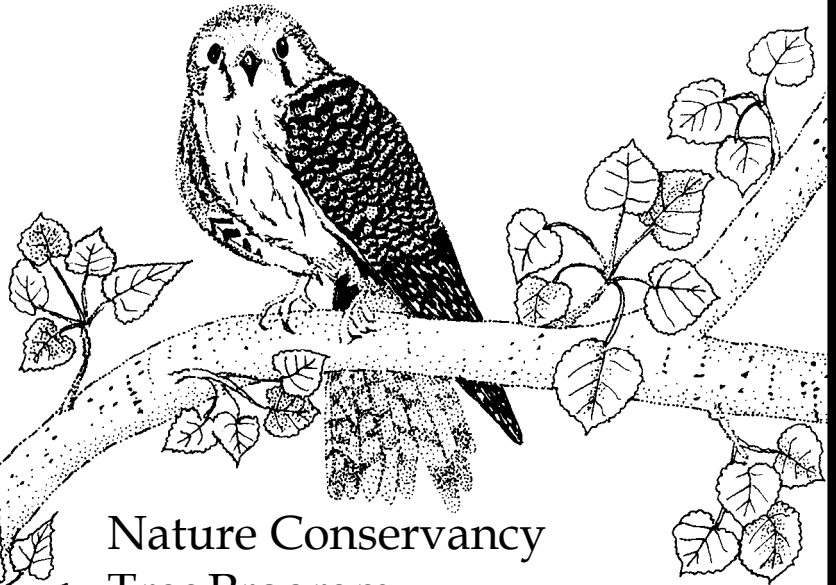
*One of the goals for Earth Day 1990 is to plant one billion trees during this decade. As wildlife educators, you can think of plenty of reasons why trees are important for all animal life. We have heard from many Project WILD teachers whose students are planting trees in celebration of Earth Day, April 22, and Arbor Day, April 27. Peter Steinhart's recent article in Audubon magazine describes the importance he places on planting trees.*

# Trees for Habitat

On the occasion of Earth Day 1990, The Nature Company has dedicated their spring catalog to trees -- "the guardians of life -- protecting the soil from erosion and wind, converting harmful ingredients in the air, providing habitats to wildlife and stabilizing local and global climates." For their contribution to Earth Day, they have pledged to plant 10,000 trees across the nation. (For their free catalog, call 1-800-227-1114.)

## The Naturalists Hotline

If you wish more information about trees or have general questions in the area of natural history, The Nature Company has established a Naturalists Hotline, 1-800-848-3583 weekdays from 9:00 a.m. to 5:00 p.m. Pacific Time. The Nature Company has trained naturalists on their staff who will answer your question or guide you in the right direction. Students are also invited to call. This service is a pilot program which is expected to be in service through May 1990.



## Nature Conservancy Tree Program

In conjunction with The Nature Company, the Nature Conservancy will plant a native tree for you in one of their current reforestation projects. These projects are conducted throughout the country, and you may contribute by sending \$14 to Nature Conservancy Tree Program, c/o The Nature Company, P.O. Box 2310, Berkeley, CA 94702. (For more information, call 1-800-227-1114).

## Three of The Nature Company's favorite books about trees:

The Man Who Planted Trees, by Jean Giono.  
(a modern day parable, \$13.50)

Trees: A Celebration  
(an anthology of writings about trees, \$15.95)

How The Forest Grew  
(for younger readers, \$10.95)

# A Special Issue on the Environment from Smithsonian

The Smithsonian Institution commemorates Earth Day and its 20th anniversary by devoting its April issue of *Smithsonian* magazine entirely to the subject of the environment. The editors introduce this comprehensive report by issuing this challenge: **Humans, as a part of the natural world, must learn to live in harmony with it -- this is sustainability, the new buzzword. A sustainable society is one whose demands upon the Earth in no way diminish the lives of future generations. Can we do what has to be done to create a sustainable society?**

Each article in this issue offers content information which may be integrated into the teaching of many of Project WILD's goals and objectives. **Awareness to Action** seems to have been the sequence guiding the editors as they selected the articles. Some of the articles are:

**THE PAST:** the first conservationists

**THE PRESENT:** environmental progress during the past two decades

**THE PREVIEW:** new methods of caring for the environment

**ON THE CONNECTICUT:** a river made safe by The Clean Water Act

**SURVIVAL FOR ENDANGERED RAPTORS:** success at the World Center for Birds of Prey in Idaho

**PAINTING NATURE:** the great outdoors

**ALTERNATIVE AGRICULTURE:** natural fertilizers and pesticides, cover crops and rotation make nature an ally

**RAILS-TO-TRAILS:** old right-of-ways make new parks

**DOWN IN THE DUMPS:** working a week in a neighborhood landfill is introduction to throwaway society

**TREES AREN'T MERE NICETIES -- THEY'RE NECESSITIES:** tree planting campaigns

**FLUSHED WITH PRIDE:** marsh and wildlife refuge in California doubles as waste treatment plant

The *Smithsonian* magazine is available at libraries or selected magazine shops for \$2.50. If you're interested in a specific article, call the Project WILD office at 801 538-4719, and we'll see that you get a copy of the article.

# Rain Forest Fest

Last year their special science project was learning about whales, and they painted a 100 foot blue whale on the playground! This year Science Specialist and Project WILD teacher Cathy Welch proposed that their special project focus on trees, and Jerry Pacheco, Art Specialist, proposed that they transform a classroom into a rain forest. These were the seeds of the idea which grew into the Rain Forest Fest, held March 29 at Country View Elementary School in Hooper.

Fifth and sixth grade students presented much of what they had learned about tropical rain forests in an evening presentation for parents and invited guests. Beginning with the Rain Forest Rap from the World Wildlife Fund, students proceeded through an evening filled with facts and figures, interspersed with poetry and song. Students handed out programs ("recycled, recyclable and biodegradable") which included the words to the rap as well as "Facts About Rain Forests" and a list of "Seven Things You Can Do to Help Save the Rain Forests." Close to 800 people joined in the grand finale, repeating the Rain Forest Rap led by the students.

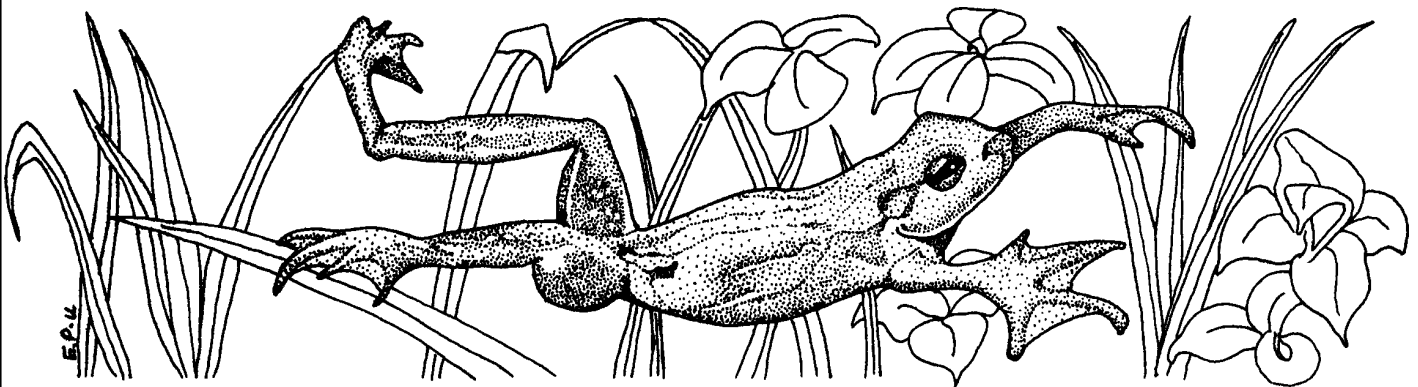
After the formal presentation, students guided visitors through the rain forest which they had created. Each wall and partition was covered with panels designed and painted by groups of students. Even the ceiling was draped with rain forest-like netting. A few animals had been brought by students and parents to lend a very realistic touch for the evening. The thick boa constrictor and colorful love bird shared the same tree (although each was monitored carefully by the owners!), and a small pond held turtles, leeches and fish. Other paper-created animals hung, lay or crawled along the pathway through the forest.

As you emerged from the rain forest, hallways decorated by other grade levels demonstrated a total school commitment to the rain forest project. In addition to the Fest, students at every grade level plan to purchase trees to plant on Arbor Day. Students are earning money through pledges secured for extra math problems completed out-of-class.

These trees will be planted in an area of the school yard which Cathy and her students are designing as a natural area. With each tree, a bottle containing the names of the children contributing to its purchase will be buried. Later this spring, donated soil and rocks will be added to the 1/2 to 1 acre site.

Cathy's and Jerry's students have illustrated with their energy and enthusiasm their commitment to working for a healthy environment. They have demonstrated their ability to "think globally and act locally!" We applaud the environmental efforts of Country View School.

*For teachers interested in touring Utah's "Rain Forest," call Cathy Welch at 732-6016.*



# Environmental Readings

(from T. H. Watkins, *Smithsonian* magazine)

T. H. Watkins, editor of *Wilderness* magazine, has recommended several books which provide historical background, information and appreciation necessary to understand many of the current environmental dilemmas and the urgent need to address them. Admitting that his list may be subjective and only partially complete, Watkins proposes it as at least a beginning for further study. We have listed here some of his choices for your reference.

Biophilia by Edward O. Wilson (Harvard University Press, 1984)

When that fragile web of life is damaged, the genetic "commons" that scientists call biological diversity is weakened. This book eloquently pleads for a conservation ethic that is built upon the recognized interdependence of all species.

Extinction: The Causes and Consequences of the Disappearance of Species by Paul and Anne Ehrlich (Random House, 1981)

An excellent primer in the processes of extinction -- both nature-driven and human-driven.

State of the World 1990, Worldwatch Institute's Seventh Annual "Report on Progress Toward a Sustainable Society" (Washington, D.C.)

Reports on the environmental phenomena threatening our planet and offers specific solutions. Expresses confidence in the rise of environmental consciousness and in elements of what could become a sustainable society in the 1990's.

The Earth Report: The Essential Guide to Global Ecological Issues, edited by Edward Goldsmith and Nicholas Hildyard

Knowledgeable essays on environmental problems. Includes useful encyclopedia of items relating to the world's ecology and its problems.

The American West as Living Space by Wallace Stegner (University of Michigan Press, 1987)

A series of brief stylish lectures introducing the forces that continue to shape the West.

This Incomparable Land: A Book of American Nature Writing, edited by Thomas J. Lyon; and

Words from the Land: Encounters with Natural History Writing, edited by Stephen Trimble (Peregrine Smith Books, 1988)

Anthologies of natural history writing beginning with 17th Century writers in Lyon's book and concentrating entirely on 20th Century writers in Trimble's book. Lyon traces the development of natural history writing in this country and includes a useful bibliography. Trimble features essays describing each author and explaining what it is about the land that shapes their individual perception.

# "BUILD A TREE"

Adapted from Sharing the Joy of Nature by Joseph Cornell

In the activity "Build a Tree," students act out the various parts of a tree: the taproot, lateral roots, heartwood, xylem, phloem, and bark. The heartwood section pantomimes providing strength and support for the tree. The roots (taproot and lateral) anchor the tree in the ground and draw up water and trace minerals. The xylem carries water up to the branches and leaves. The phloem carries food from the leaves down to be stored in the roots, and the bark protects the tree.

**HEARTWOOD:** Select two or three tall students to represent the heartwood. Have them stand with their backs to each other. Ask a student to describe the function of the heartwood: "This is the heartwood --the inner core, the strength of the tree. The heartwood's job is to hold the trunk and branches upright so the leaves can get their share of the sun. The heartwood has been around a long time -- so long that it's dead; but it's well preserved! The heartwood used to be alive, but its thousands of little tubes that carried water up and food down are now all clogged with resin and pitch."

**TAPROOT:** Next, ask several people to represent the taproot. Tell them to sit down at the base of the heartwood, facing outward. Ask a student to describe the function of the taproot: "You are a very long root, called a taproot. Plant yourself deep in the ground -- about thirty feet. The taproot enables the tree to get water from deep in the earth, and also anchors the tree firmly to the ground. When storms come, the taproot keeps the tree from being blown over by high winds. Not all trees have a taproot (e.g., redwoods), but this one does."

**LATERAL ROOTS:** Select several students with long hair who look as if they won't mind lying on the ground. Ask the "lateral roots" to lie on their backs with their feet up against the trunk and their bodies extending away from the tree. Ask a student to describe the function of the lateral roots: "You are the lateral roots. There are hundreds and hundreds of you. You grow outward all around the tree, like branches but underground. You also help hold the tree upright. At your tips are tiny root hairs."

At this point, ask the students to spread their hair out around their heads. Ask the narrator to continue: "Trees have thousands of miles of root hairs that cover every square inch of soil into which they grow. When they sense that there is water nearby, the cells grow toward it and suck it up."

**XYLEM:** Now, select a small group of students to represent the xylem. Choose enough people to form a complete circle around the heartwood. Ask them to circle the heartwood, facing inward and holding hands, being careful not to step on any roots! Ask a student to describe the function of the xylem: "You are the part of the tree called the xylem, or sapwood. You draw water up from the roots and lift it to the tree's highest branches. You are the most efficient pump in the world with no moving parts. You're able to lift hundreds of gallons of water a day, and you do this at speeds of over 100 miles an hour! After the roots slurp the water from the ground, your job is to bring the water up the tree."

**PHLOEM:** Select a group of students to represent the phloem. Ask them to form a circle around the xylem, also facing inward and holding hands. Ask a student to describe the function of the phloem: "You are the part of the tree that carries food manufactured by the leaves and distributes it to the rest of the tree." (Ask the students to turn their hands into leaves by stretching their arms upward and outward so that they intersect each other's arms at wrists and forearms, leaving their hands free to flutter like leaves.) "Between you and the xylem is the cambium layer, the growing part of the tree. Every year it adds a new layer to the xylem and phloem. A tree grows outward from its trunk, and also from the tips of its roots and branches."

**BARK:** Ask the remaining people to play the bark. Ask them to circle round the tree, facing outward. Ask a student to describe the function of the bark: "You are the bark. You protect the tree from fire, insects, extreme temperature changes and people who carve their initials on the tree."

*continued on page 8*

For "Build A Tree,"

## Creative Dramatics Extension

(for primary grades)

Now that you have created a tree, you may ask your students to add motion and sound to portray their parts:

**HEARTWOOD:** Stand tall and strong!

**TAPROOT:** Taproots suck up water. Make loud slurping noise when acting out your part!

**LATERAL ROOTS:** Lateral roots also slurp loudly when sucking up water!

**XYLEM:** When the direction is given to bring the water up, the xylem students throw their arms up into the air and shout "Wheeee!".

**PHLOEM:** When the direction comes to make food, the phloem students raise their arms and flutter their leaves and absorb the energy from the sun and make food.

When the direction is given to bring down the food, the phloem students go "Whoooo!" (Make the "Whoooo!" a long descending sound while they bend at the knees and drop their arms and body toward the ground.)

Commands for the first round of creative dramatics should proceed like this:

**HEARTWOOD, STAND TALL AND STRONG!**

**BARK, LOOK TOUGH!**

**ROOTS, SLURP!**

**XYLEM, BRING THE WATER UP!**

**LEAVES, MAKE FOOD!**

**PHLOEM, BRING THE FOOD DOWN!**

## Suggested Follow-Up Activities

(for intermediate grades)

1. Repeat the dramatization enough so students understand the working structure and growth of a tree. Students may practice portraying different parts of the tree.
2. Divide the students into small groups with each group responsible for portraying its own tree. Ask each group to choose a species of tree to research and report on.
3. Discuss photosynthesis and ask each group to act out the process. Ask the rest of the class to explain the different steps portrayed and how they worked in the dramatization.

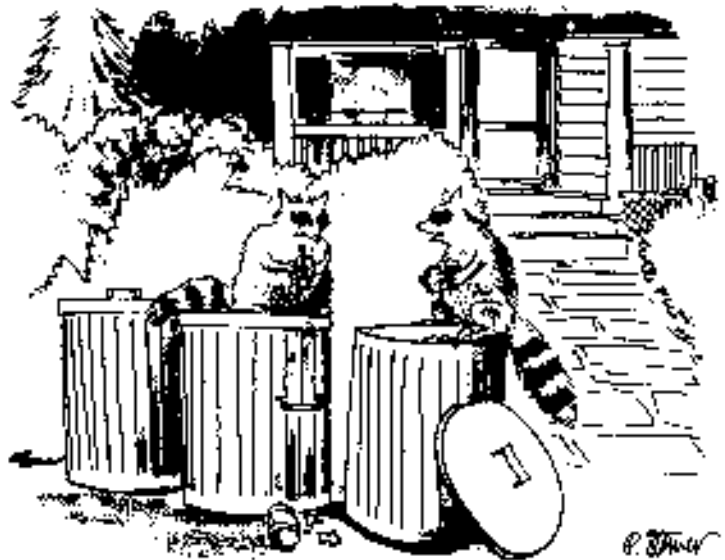


# Project WILD Workshop Schedule

April 20-21	Jordan School District Workshop, Salt Lake City
April 26-27	Grand School District Workshop, Moab
April 26 & May 3	Snow College Pre-service Teachers Workshop, Ephraim
April 27-28	Zion Project WILD Workshop, Zion National Park
April 28	Girl Scout Leaders Workshop, Camp Trefoil
April 28	Girl Scout Leaders Workshop, Pioneer Park, Ogden
May 5	"A Day in the Marsh," Project WILD II, Davis County School District, TBA
May 15 & 17	BYU Pre-service Teachers Workshop, Bean Museum, Provo
May 29-30	BYU Pre-service Teachers Workshop, Bean Museum, Provo
June 12	Girl Scout Camp Leaders Workshop, Camp Trefoil
June 13	Girl Scout Camp Leaders Workshop, Camp Cloud Rim
June 18 & 20	Nebo, Alpine & Provo School Districts Workshop, Springville
June 25-27	Canyonlands Field Institute, Moab
July 30-August 3	Gooseberry Workshop, Salina Canyon

## Uintah Students Honored

For their diligent and successful efforts in establishing a recycling program for Weber County, 5th and 6th grade students at Uintah Elementary School (see article in *Growing WILD*, Winter 1990) have been awarded the Ogden Nature Center Conservation Award for 1990! This award will be presented to student representatives accompanied by their teacher, Donna Kimball, at the Nature Center's annual Arbor Day Celebration, April 27 from 2:00-3:30. We support the Nature Center's professional commitment to recognize outstanding environmental achievements and compliment the dedication and hard work of the Uintah Elementary students and teachers! The public is warmly invited to attend the Nature Center's Arbor Day Celebration.



"I think it's very considerate of people to separate their trash."

# Project Learning Tree Workshops

Project Learning Tree is an award-winning environmental education program which focuses on learning about forests. PLT is interdisciplinary and supplementary to school curricula, designed for use in grades K-12. For more information about attending these workshops, contact Tony Dietz, State Coordinator, at 538-5505.

April 20-21	Granite School District, Cottonwood High School
April 27-28	Jordan School District, TBA
April 27-28	Tooele School District, TBA
May 4-5	Utah State University Pre-Service
May 11-12	Weber/Ogden School Districts, North Fork Environmental Center
June 8-9	Cache School District, TBA
June 25-27	Canyonlands Field Institute, Moab
July 30-August 3	Gooseberry Workshop, Salina Canyon

Remember that the National Arbor Day Foundation has produced educational materials for use in fifth grade classrooms. These free kits are available from: Trees are Terrific, National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410 (402-474-5655).

## SAMPLE SOME SUMMER STUDIES!!

### **The Alpine Conference, Alpine, WY, June 17-22, \$175.**

Hands-on workshop for teachers K-12, resource agency people and youth group leaders. Includes field investigation studies, Project Learning Tree Workshop, introductions to Project WILD, OBIS and other environmental education programs, and development of skills to strengthen problem-solving techniques and generate higher-level thinking skills. Contact Jeanne Barrett, Caribou National Forest, Federal Bldg., Suite 294, 250 South 4th Avenue, Pocatello, ID 83201 (208 236-7500).

### **Central Utah Outdoor Education Workshop, Gooseberry Guard Station, Fishlake National Forest, about 17 miles east of Salina, UT, July 30-August 3, \$100.**

Hands-on workshop for teachers K-12, resource agency people and youth group leaders. Includes choice of Project WILD Workshop or Project Learning Tree Workshop, field investigation studies, and creative ideas for learning about the environment. Contact Bill Wood, USDA Soil Conservation Service, P.O. Box 534, Richfield, UT 84701.

### **Mt. Charleston Outdoor Education Workshop, Lee Canyon near Las Vegas, NV, July 15-19, \$135.**

Hands-on workshop for teachers K-12, resource agency people and youth group leaders. Includes field investigation studies and development of skills to strengthen problem-solving techniques. Emphasizes desert environment through art, investigations and the Native American culture. Contact Shirley Pollock (702 786-7797 or 702 849-2180).

*The Project WILD Office (801 538-4720) has additional information on each of the programs listed above as well as on summer programs offered by the National Audubon Society, Teton Science School, Canyonlands Field Institute, Yellowstone Institute, Utah Museum of Natural History, Hogle Zoo and National Wildlife Federation.*

## Utah Birdline

For current sightings of birds throughout the state, call this new number for the Utah Birdline: 538-4730. As of April 2, sightings and locations were given for spring arrivals such as sandhill cranes, snow geese, trumpeter swans, common and red breasted mergansers, and loons. At the end of this recorded message provided by the Utah Division of Wildlife Resources, you may also add any of your own interesting or unusual sightings.

## Wildflower Hotline

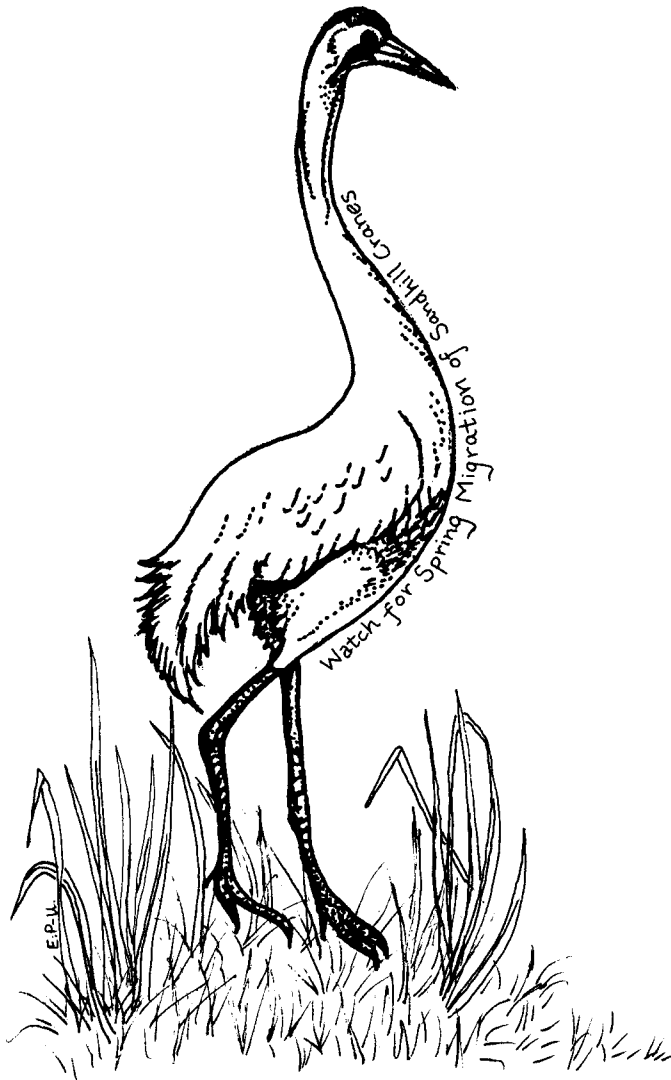
To receive current information on wildflowers blooming throughout Utah, call 581-4696. Listen for weekly wildflower information on KUER public radio station FM 90.1 at 11:00 Friday mornings. Both services are available April through October.

## Air Pollution Report

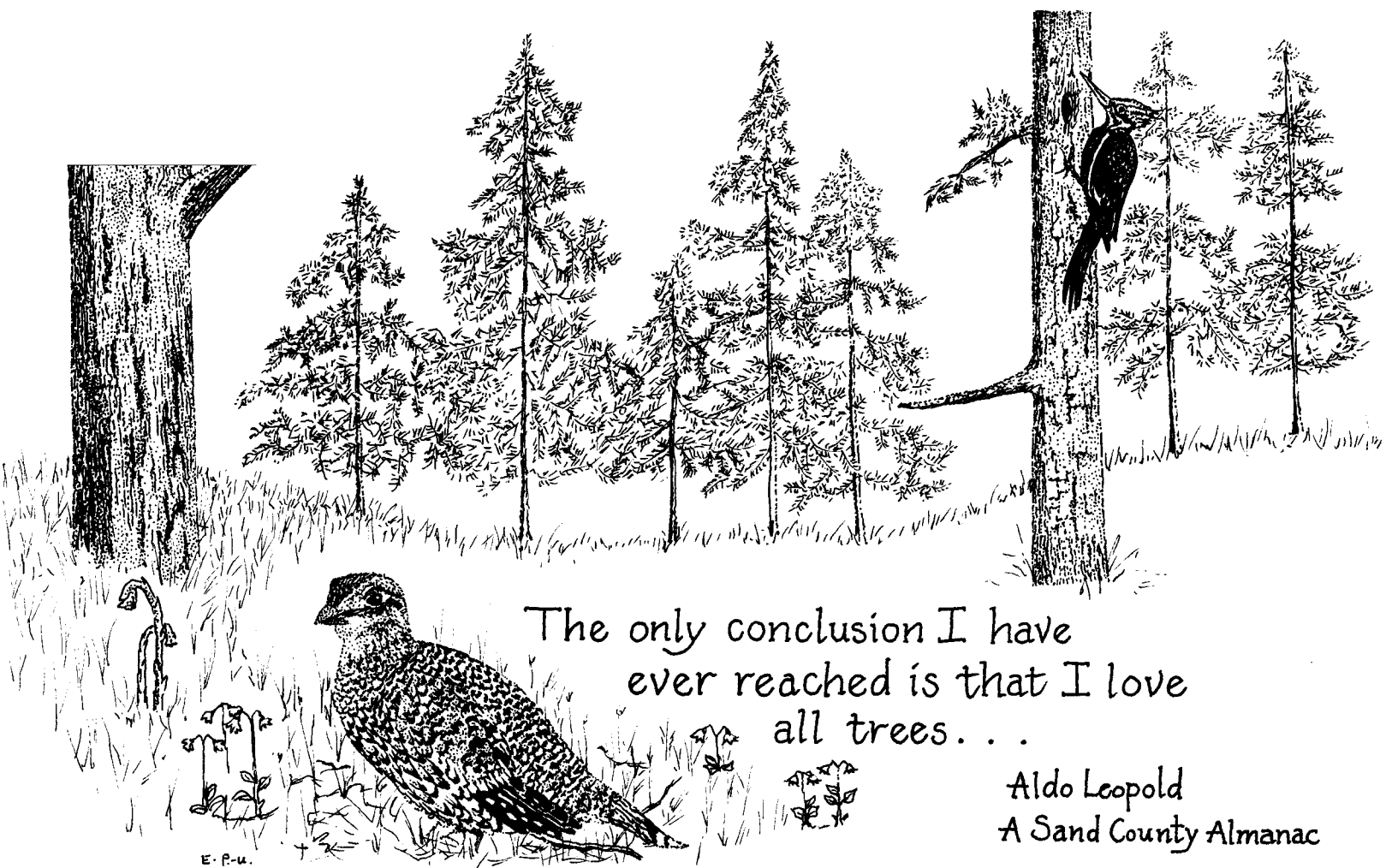
For the latest air quality news along the Wasatch Front, call 533-7239. The Utah Bureau of Air Quality reports the current and expected air pollution levels via recorded message. The report is updated daily or as pollution levels change. The pollution index ratings are: zero-50 (good); 51-100 (moderate); 101-199 (unhealthy); 200-299 (very unhealthy); and 300-500 (hazardous). Special advisories or recommendations will be given if pollution levels dictate. Complete index ratings are also available for sulfur dioxide, ozone, carbon monoxide and particulates.

## Free Poster Worth Saving

"Worth Saving" poster is available from National Science Foundation for National Science & Technology Week, April 22-28, 1990. The colorful free poster depicts the earth protected in an oyster shell at the edge of the ocean. Contact National Science and Technology Week 1990 Poster, National Science Foundation, 1800 G Street NW, Room 527, Washington, D.C. 20550 (202-357-9859). Listed on the back of the poster are 47 organizations dedicated to educating on issues concerning our environment. Materials available from each organization are described.



New Phone Number: (801) 538-4720



The only conclusion I have  
ever reached is that I love  
all trees. . . .

Aldo Leopold  
A Sand County Almanac